BINGHAMTON
UNIVERSITY

GEORGE J. KLIR, DISTINGUISHED PROFESSOR
DEPARTMENT OF SYSTEMS SCIENCE AND INDUSTRIAL ENGINEERING
THOMAS J. WATSON SCHOOL OF ENGINEERING AND APPLIED SCIENCE

PO Box 6000
Binghamton, New York 13902-6000
607-777-6509

TO: Scientific Officer Code: 314SE
Clifford G. Lau, Office of Naval Research
Ballston Tower One
800 North Quincy Street
Arlington, Virginia 22217 - 5660

FROM: George Klir, Zhenyuan Wang, Principal Co-Investigators

DATE: March 27, 1995

SUBJECT: Grant No. N00014-94-1-0263; quarterly report No. 5
(January 1 - March 31, 1995)

During the first quarter of 1995, we focused our efforts on strategy V for constructing fuzzy measures, as described in our proposal, and a new strategy (VI) for obtaining belief measures using the principle of maximum uncertainty.

In connection with strategy V, we have shown that any strictly monotone transformation of a fuzzy measure is also a fuzzy measure. Moreover, the new fuzzy measure inherits most of the structural characteristics of the original fuzzy measure. We also investigated in more detail quadratic and cubic transformations. Our results are covered in a working paper "Constructing Fuzzy Measures by Transformations."

We have very good progress in solving problems connected with computational aspects of strategy VI. We have found an effective algorithm for computing the uncertainty measure *AU* mentioned in our quarterly report No. 4. The result is described in a working paper "On the computation of the uncertainty measure for the Dempster-Shafer Theory."

We were invited to write an extended version of our contribution to the IFSA'93 World Congress in Soul, South Korea, for a book of selected papers from the conference. The resulting paper is entitled "Expressing fuzzy measure by a model of modal logic: A discrete case."

March 20-24, 1995, George Klir attended the International Joint Conference of the Fourth IEEE International Conference on Fuzzy Systems and the Second International Fuzzy Engineering Symposium (FUZZ–IEEE/IFES'95) in Yokohama, Japan, where he also presented a paper "Absolute continuity of fuzzy measures." The paper is included in conference proceedings.

Currently we continue our work on the above mentioned strategies V and VI.

Grant No. N00014-94-1-0263; quarterly report No. 5 March 27, 1995

cc: Administrative Grants Officer, Office of Naval Research, Resident Representative, 33 Third Avenue Lower Level, New York, NY 10003 - 9998.
Director, Naval Research Lab., ATTN.: Code 2627, Washington, D. C. 20375.
Defense Technical Information Center, Bldg. 5, Cameron Station, Alexandria, Virginia 22304 - 6145

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2. The Defense Technical Information Center received the enclosed report (referenced below) which is not marked in accordance with the above reference.

QUARTERLY REPORT #5
N00014-94-1-0263
TITLE: CONSTRUCTING FUZZY
MEASURES BY TRANSFORMATIONS

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